

CLAIMS

1. A diagnostic system, comprising:
an emission control system comprising at least a
5 particulate filter, said emission control system coupled
downstream of an internal combustion engine;
a sensor providing a signal indicative of an exhaust gas
pressure upstream of said emission control system; and
a computer storage medium having a computer program
10 encoded therein, comprising:
code for estimating a pressure drop across the
particulate filter based on at least said sensor signal.
2. The diagnostic system as set forth in Claim 1
15 wherein said internal combustion engine is a diesel engine.
3. The diagnostic system as set forth in Claim 1
wherein said sensor is an absolute pressure sensor.
- 20 4. The diagnostic system as set forth in Claim 1
wherein said emission control system further comprises an
oxidation catalyst coupled upstream of the particulate filter.
5. The diagnostic system as set forth in Claim 4
25 wherein said emission control system further comprises a NOx
aftertreatment device.
6. The diagnostic system as set forth in Claim 5
wherein said NOx aftertreatment device is a Lean NOx Trap
30 (LNT).
7. The system as set forth in Claim 6 wherein said LNT
is coupled downstream of the particulate filter.
- 35 8. The system as set forth in Claim 6 wherein said LNT
is coupled upstream of the particulate filter.

9. The system as set forth in Claim 5 wherein said NOx aftertreatment device is a urea-based SCR catalyst.

10. The diagnostic system as set forth in Claim 1
5 wherein said computer storage medium further comprises code for providing an indication that particulate filter regeneration is required based on said estimated pressure drop across the particulate filter.

10 11. The system as set forth in Claim 1 wherein said estimating of said pressure drop across the filter is further based on an atmospheric pressure.

12. The system as set forth in Claim 11 wherein said
15 estimating of said pressure drop across the filter is further based on a model of a pressure drop across said oxidation catalyst.

13. The system as set forth in Claim 12 wherein said
20 estimating of said pressure drop across the filter is further based on a model of a pressure drop across said Lean NOx Trap.

14. The system as set forth in Claim 13 wherein said
25 estimating of said pressure drop across the filter is further based on a model of a pressure drop across a muffler.

15. A diagnostic method for an exhaust gas
aftertreatment system coupled downstream of an internal
combustion engine, the system comprising at least a
30 particulate filter, the method comprising:

measuring an exhaust gas pressure upstream of the
exhaust gas aftertreatment system; and

estimating a pressure drop across the particulate filter
based at least on said measured upstream exhaust gas pressure.

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16. The method as set forth in Claim 15 wherein the
engine is a diesel engine.

17. The method as set forth in Claim 16 wherein the exhaust gas aftertreatment system further comprises an oxidation catalyst coupled upstream of the particulate filter.

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18. The method as set forth in Claim 13 wherein the emission control system further comprises a NOx aftertreatment device.

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19. The method as set forth in Claim 15 wherein said estimating is further based on an atmospheric pressure.

20. The method as set forth in Claim 19 wherein said estimating is further based on mass airflow.

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21. The method as set forth in Claim 20 wherein said estimating is further based on a pressure drop across said oxidation catalyst.

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22. The method as set forth in Claim 21 wherein said estimating is further based on pressure drop across said lean NOx trap.

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23. The method as set forth in Claim 22 wherein said estimating is further based on a pressure drop across a muffler.

24. An emission control system for a diesel engine, comprising:

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an oxidation catalyst coupled downstream of the engine;
a particulate filter coupled downstream of said oxidation catalyst;

a lean NOx trap coupled downstream of said particulate filter; and

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a computer providing an indication that particulate filter regeneration is required based at least on a measurement of an exhaust gas pressure upstream of said oxidation catalyst, said computer further regenerating said
5 particulate filter in response to said indication.